DOCUMENT RESUME

ED 386 483 TM 024 048

AUTHOR Laosa, Luis M.
TITLE Family Characteristics as Predictors of Individual Differences in Chicano Children's Emergent School Readiness.
INSTITUTION Educational Testing Service, Princeton, N.J.
SPONS AGENCY Administration for Children, Youth, and Families (DHHS), Washington, D.C.
REPORT NO ETS-RR-93-34
PUB DATE Jul 93
CONTRACT 90-C-1257
NOTE 70p.; Portions of this paper were prepared for presentation at the Annual Meeting of the Society for Research in Child Development (60th, New Orleans, LA, March 1993).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Family Characteristics; *Individual Differences; Longitudinal Studies; Mexican Americans; Performance; *Prediction; *Preschool Children; Preschool Education; *School Readiness; Socioeconomic Status
IDENTIFIERS *Chicanos; Emergent Literacy

ABSTRACT

This study of normal young children in 100 two-parent Chicano households of widely varied socioeconomic levels assessed the ability of selected family sociodemographic and intellectual characteristics to predict individual differences in the children's performance on a measure of emergent school readiness. Data were collected longitudinally in the home at ages 30, 42, and 48 months. Emergent school readiness was measured using the Preschool Inventory, administered at each of the last two longitudinal points. The family characteristics examined were: (1) specific sociodemographic variables (household financial income, mother's and father's schooling attainment levels, occupational status, and the family size, sibling constellation, and home language) and (2) the mother's and father's performance on the Culture Fair Intelligence Test. Contemporaneous and time-lagged zero-order and partial correlations and multiple regressions assessed the unique, shared, and shifting strengths of these hypothesized family predictors of child performance. Together these predictors accounted for 50% of the variance in child performance. (Contains 8 tables, 2 figures, 1 appendix, and 66 references.) (Author)

RESEARCH REPORT

FAMILY CHARACTERISTICS AS PREDICTORS OF INDIVIDUAL DIFFERENCES IN CHICANO CHILDREN'S EMERGENT SCHOOL READINESS

Luis M. Laosa

Educational Testing Service
Princeton, New Jersey
July 1993

Family Characteristics as Predictors of Individual Differences in Chicano Children's Emergent School Readiness

Luis M. Laosa

Educational Testing Service, Princeton, New Jersey

Parts of this report were prepared for presentation at the 60th Anniversary Meeting of the Society for Research in Child Development, New Orleans, Louisiana, March 1993. Sections of this article were written while the author was the recipient of a Senior Scientist Award from Educational Testing Service. Data collection for the dataset used in this study was supported by a research grant (90-C-1257) from the U.S. Administration for Children, Youth, and Families to the author.

\prsrrev.ms\

Family Characteristics as Predictors of Individual Differences in Chicano Children's Emergent School Readiness

Luis M. Laosa

Educational Testing Service, Princeton, New Jersey

Abstract

This study of normal young children in 100 two-parent Chicano households of widely varied socioeconomic levels assessed the ability of selected family sociodemographic and intellectual characteristics to predict individual differences in the children's performance on a measure of emergent school readiness. Data were collected longitudinally in the home at ages 30, 42, and 48 months. Emergent school readiness was measured using the Preschool Inventory, administered at each of the last two longitudinal points. The family characteristics examined were (a) specific sociodemographic variables (household financial income, mother's and father's schooling attainment levels, occupational status, and the family size, sibling constellation, and home language) and (b) the mother's and father's performance on the Culture Fair Intelligence Test. Contemporaneous and time-lagged zero-order and partial correlations and multiple regressions assessed the unique, shared, and shifting strengths of these hypothesized family predictors of child performance. Together these predictors accounted for 50 % of the variance in child performance.

Family Characteristics as Predictors of Individual Differences in Chicano Children's Emergent School Readiness

Luis M. Laosa

Educational Testing Service, Princeton, New Jersey

In recent years, interest has intensified--among research scientists, the public generally, and policy makers--in the topic of families as sources of influence on children's learning and development (e.g., National Commission on Children, 1991). This upsurge of national interest in family influences arises largely from concerns about young children's readiness for the demands of formal schooling (e.g., Goal 1 Technical Planning Subgroup, 1991; National Education Goals Panel, 1992). The focus on these issues reflects problems that many educators face and that seriously affect their students, especially many children from certain ethnocultural backgrounds, including Chicanos[1] (Valencia, 1991). Also linked to these concerns is a growing recognition that many families with young children live in economic poverty and that the financial circumstances of families can influence the development of the child (e.g., Garcia Coll, 1990; Huston, 1991; National Center for Children in Poverty, 1990, 1992).

Parts of this report were prepared for presentation at the 60th Anniversary Meeting of the Society for Research in Child Development, New Orleans, Louisiana, March 1993. Sections of this article were written while the author was the recipient of a Senior Scientist Award from Educational Testing Service. Data collection for the dataset used in this study was supported by a research grant (90-C-1257) from the U.S. Administration for Children, Youth, and Families to the author.

For the vast majority of Chicano children, their first experience with formal schooling is kindergarten (U.S. Bureau of the Census, 1992). While many children adjust well to this encounter because they already possess the knowledge and skills that teachers generally consider necessary for success in kindergarten, other children at this juncture lack these particular competencies and consequently face serious problems in this major life transition. These considerations have compelled national attention to and stimulated much discussion about school readiness; indeed, so much so that school readiness is named first among the national goals recently proposed in joint accord by the state governors and the President of the United States to increase educational opportunity and achievement in this country (National Education Goals Panel, 1992). Discussions about school readiness thus far have been largely polemical, however, partly as a result of limitations in the available data.

Much of the existing research on ethnocultural minorities involves comparisons between these groups and so-called reference populations. Such studies yield useful information, but we also need a deeper understanding of the variations and dynamics that occur <u>within</u> particular groups (Laosa, 1991). Similarly, well-executed longitudinal research on minority groups is rare--being as it is expensive, time demanding, and exceptionally difficult to accomplish properly. We especially need the kind of knowledge about individual differences in development that can best be gained through predictive longitudinal studies designed for specific populations.

As an area of study, emergent school readiness differs from the conventional meanings of the terms "school readiness," "reading readiness," and "early reading and writing." As a construct, emergent school readiness stresses individual differences in children's learning and development of predispositions and dispositions for adaptation to the demands of formal schooling; as such, it posits a continuum of development involving multiple dimensions ever subject to relevant influences beginning at birth or earlier. Research on emergent school readiness is not necessarily concerned with identifying a cutoff point for making decisions about individual children's school entry; in fact, it represents an attempt to move away from such approaches by prompting us to address the processes and multiple contexts of human learning and development.

The present study focuses on Chicano children and families of widely varied socioeconomic levels--an ethnic group that constitutes a very rapidly expanding segment of the total U.S. population (U.S. Bureau of the Census, 1990). Despite this rapid population growth, the median family income and the average academic achievement and schooling attainment of Chicanos as a group continue to lag seriously behind national norms (U.S. Bureau of the Census, 1990, 1991; Valencia, 1991). Using a longitudinal design with repeated measures, the present study sought to assess the ability of selected family characteristics to predict, at varied ages, individual differences in the development of emergent school readiness among normal children in

this ethnic group. Two types of family characteristics were examined: (a) specific sociodemographic variables, namely household income, mother's and father's schooling attainment levels, occupational status, the sibling constellation, family size, and home language; and (b) the mother's and father's fluid intelligence. These family characteristics were selected for analysis because previous research and theory have implicated them as potential influences on Chicano children's learning, development, and academic achievement, as noted below.

Economic poverty is a condition experienced by a very high proportion of the Chicano population--a longstanding and serious problem facing especially children: Nearly 40% of Chicanos under 18 years of age live below the official poverty level (U.S. Bureau of the Census, 1991). Among the most serious social implications of this situation is the association between socioeconomic status and children's academic achievement--a well-documented finding for this population and others (National Center for Education Statistics, 1992; Valencia, 1991). Because socioeconomic status is traditionally viewed and studied as a global construct, specific sociodemographic variables--income, occupational status, parental schooling--are typically subsumed aggregately under a general "index of social class." Although suitable for some types of analysis, this approach can mask theoretically meaningful and policy-relevant components of variance. For example, if the explanatory model of schooling influences discussed below is correct, we should expect that,

except for cases of extreme deprivation, children's emergent preparedness for formal schooling should be less a function of the family's material resources and social position (income, occupation) than of parental schooling level.

An association between parental schooling level and children's academic performance is a frequent research finding (e.g., Nielsen & Fernandez, 1981; Stricker & Rock, 1993). A hypothetical model of the processes that may account for this association proposes that formal schooling shapes not only the individual's development, but also the family, particularly the nature of the parent-child relationship (Laosa, 1982b). In turn, in the context of the parent-child relationship the child acquires certain predispositions and dispositions that later develop into particular classroom behavior patterns that are more or less academically adaptive depending on parental schooling level--the higher the parent's schooling level, the more academically adaptive the child's acquired predispositions and dispositions (Laosa, 1982b; LeVine, 1980). For example, harmonious with a prediction derived from this model, research (Laosa, 1978, 1982b) on mother-child interactions in Chicano families has shown that the higher the mothers' schooling level, the greater the resemblance between the teaching strategies they use with their own young children and those that typically occur in school classrooms; similar findings have been reported for other cultural groups (e.g., Podmore & St. George, 1986; Richman, Miller, & LeVine, 1992). If this model is correct, a child's

predispositions and dispositions for academic adaptation will begin to emerge and thus become palpable at some time prior to school entry. Accordingly, these predispositions and dispositions should find expression in the child's performance on measures of emergent school readiness, and we therefore should be able to predict this performance on the basis of parental schooling level.

Another salient characteristic of the Chicano population is its high fertility level (Bean & Tienda, 1987). Consequently, children from this population have more siblings on the average and are less likely to be an only child than is the case for other U.S. ethnic groups. In addition, Chicano households on average contain more adults than does the typical U.S. household (Bean & Tienda, 1987; U.S. Bureau of the Census, 1991). The significance of these population characteristics becomes evident in light of empirical research and theory regarding the potential influence of family size on intellectual development. The confluence model (Zajonc, 1976, 1983; Zajonc & Markus, 1975) was offered to explain the frequently observed negative association between the number of children residing in the household (sibship size) and children's intellectual performance. The confluence model defines the intellectual environment of the home as the average absolute intellectual maturity of all household members, and it proposes that this environment directly influences the intellectual development of the children born into it. Thus, because adults are cognitively more advanced than children, they

contribute more intellectual stimulation; accordingly, the average intellectual environment is depressed, or "diluted," by the addition of children to the family. Only children, however, appear to be an exception to this general prediction--research suggests that singletons do not perform as well intellectually as do children in small sibship sizes (Zajonc, Markus, & Markus, 1979). To accommodate this finding, a revised confluence model predicts a cognitive disadvantage for only children--a disadvantage presumably resulting from their lack of opportunity to teach younger siblings (Zajonc et al., 1979). These predictions are expected to hold independently of socioeconomic status (Zajonc, 1983). Although these predictions are derived from confluence theory, the present study is not a formal test of the confluence model; such a test would require very large samples to support parameter estimation using the particular mathematical expressions and additional family variables proposed by Zajonc and his colleagues. Nevertheless, these particular predictions have been confirmed for various populations (Steelman, 1985; Zajonc, 1983) even when ignoring, as the present study does, the other propositions and mathematical expressions of the confluence model. The cross-cultural generalizability of these predictions has been questioned, however, because of suggestions that the negative intellectual effects of large sibship sizes can be attenuated or offset by supportive cultural forces--for example, by the social value placed on large families (Rankin, Gaite, & Heiry, 1979; Zajonc, 1983).

Another distinctive characteristic of family composition in the Chicano population is its very high proportion of husband-wife households. Indeed, the vast majority of Chicano children reside with their two parents (Laosa, 1988; U.S. Bureau of the Census, 1991). For this reason and because research on this ethnic group has rarely examined paternal influences on young children, the present study focuses on two-parent families.

A characteristic of family life that can be critical in the educational development of children from ethnolinguistic minorities is home language. Many still-unresolved policy issues revolve around the difficulties that students from non-English language backgrounds--and their teachers--face in a school system dominated by the use of English (e.g., Garcia, 1991; Laosa, 1984b; Merino, 1991). Among Chicano families, individual differences in the choice of home language vary widely--ranging from English-only to English and Spanish in various proportions and patterns to Spanish-only households (Laosa, 1975; Macías, 1979). Whereas at the turn of the century bilingualism in children was considered by many educators to be a linguistic, cognitive, and academic liability, our present understanding is that bilingualism need not be a detriment and that it may even produce unique cognitive and metacognitive advantages (Garcia, 1991). Yet, studies of Hispanic populations in the United States often show a negative association between academic achievement and the use of Spanish in the home (e.g., Durán, 1983; National Center for Education Statistics, 1992; Nielsen & Fernandez,

1981). The interpretation of this association is obscured, however, by the also negative association of both academic achievement and the tendency to use Spanish in the home with socioeconomic status (Laosa, 1982b; Nielsen & Fernandez, 1981; Rumberger, 1991).

Finally, despite its theoretical relevance (e.g., Cattell, 1987; Messick, 1992; Scarr & Carter-Saltzman, 1982), a family characteristic seldom included in research concerned with family influences is parental fluid intelligence. Because correlations between characteristics of parents and their children's performance may reflect genotype, this omission has limited our ability to demonstrate environmental influences on learning and development. Although we do not experimentally control genetic components of variance, we enhance our ability to interpret the data by statistically controlling for measured parental fluid intelligence (Cattell, 1987; Scarr, 1992; Scarr-Salapatek, 1975).

Even with longitudinal designs, correlational data preclude definitive causal inferences. Yet, the nature of issues and variables such as those addressed in the present study are hardly amenable to random-assignment experimentation. Thus, even when we use causal terminology, it is understood that we cannot entirely rule out plausible alternative explanations concerning unexamined covariation. Nevertheless, these data are useful and illuminating insofar as they provide at least tentative answers to socially and scientifically important questions about the intergenerational transmission of potentially consequential individual differences.

Method

Sample

The focal children were the full sample in a large research database of 100 Chicano children (44 boys, 56 girls) whose both parents identified themselves and their respective parents by such terms as Mexican-American, Mexicano, American of Mexican origin, or Chicano. All except six of the families were still available for assessment at the last longitudinal point. In order to select the sample, invitations for potential participation were mailed in both Spanish and English to all Spanish-surnamed parents registered as having given birth in Bexar County (San Antonio), Texas, from October 15, 1975 through July, 1976. In addition, invitations were widely circulated by word-of-mouth, published in newspapers, and posted throughout the area. From information on the potential-participant consent forms and from interviews by phone or home visit, the sample was selected to be as similar as possible to the total U.S. Chicano population with regard to the range, mean, and distributional shape of parental schooling level, household income, and household family size; the sample and the corresponding U.S. census figures are highly similar (Laosa, 1982a). To control for potentially confounding factors in the design, included were only households in which both biological parents resided with the child, the mother was not employed full-time outside the home, and the child did not attend a nursery school or child care center. For the purpose of maximizing success in conducting the

longitudinal follow-ups, preference was given to the selection of families with the longest history of residence in south-central Texas, no plans to move out of this area during the three-year period of data collection, and steadily employed fathers. Accordingly, 91 % of the mothers and 85 % of the fathers were U.S.-born, and almost all the fathers were employed. Only one child per household was selected for participation. Children with known physical or mental abnormalities were excluded from the sample.

Procedures

Each mother was interviewed initially when her child was age 30 months and again at age 48 months (approximately plus or minus 2 months). Each child was administered the Preschool Inventory initially at age 42 months and again at age 48 months (approximately plus or minus 2 months). These procedures were conducted individually in the respective homes. In addition, both parents were administered the Culture Fair Intelligence Test in small groups at the last longitudinal point. The instruments were administered in the participant's preferred language or dialect (English, Spanish, or a dialect that switches between and mixes the two languages) by bilingual women indigenous to the sample's ethnic group and geographic area who were trained as examiners/interviewers for this purpose. Instruments and items for which no adequate standardized Spanish-language editions were available were translated (local San Antonio Spanish) using the procedures generally recommended for this purpose (Brislin,

1986). English was the primary language of administration for approximately three-fourths of the sample, Spanish for about one-tenth, and switching/mixing for about one-seventh.

Measures

Preschool Inventory (PI). Developed as a general achievement test for children in the age range of three-to-six years, the PI taps a range of verbal, quantitative, and perceptual-motor skills, information, conceptual knowledge, and responsiveness to instructions. This 64-item test was developed particularly for use with economically disadvantaged children to give a measure of achievement in areas generally regarded by classroom teachers as expected of children in kindergarten and necessary for subsequent success in school. It has been widely used in studies of Head Start (Caldwell & Freund, 1980). Published English- and Spanish-language editions are available. The most recent revision of the instrument was used; the administration and scoring procedures specified in the manual were followed (Caldwell, 1970, 1974; Cooperative Tests and Services, 1970a, 1974). The total score (number of correct items) was used in the analyses[2]. The internal-consistency reliabilities (K-R 20) for the present sample were .88 at age 42 months and .90 at 48 months. The test-retest Pearson product-moment correlation over this six-month span was .81 (Laosa, 1982a).

Culture Fair Intelligence Tests (CFIT). The CFIT is intended to measure general fluid ability in a manner designed to

minimize as much as possible the influence of verbal fluency, education, and culture. Theoretically conceived as distinct from (though related to) crystallized intelligence, which springs largely from educational and cultural influences and other learned skills, fluid ability is considered to be a general mental capacity for problem solving; specifically, as a complex of reasoning processes requiring abstracting, concept attainment, and the perception and eduction of relations, it is viewed as having the fluid quality of being directable to almost any problem requiring adaptation, especially to novel circumstances (Cattell, 1987; see also Messick, 1992). The CFIT was administered to the mothers and fathers, using the procedures specified in the Manual (Institute for Personality and Ability Testing, 1973a). Scale 2, Form A was used; it contains 46 items divided into four tests involving different perceptual-cognitive tasks (Cattell & Cattell, 1957a, b). The Scale's total raw score (number of correct items) was used in the analyses. Published editions are available in English and Spanish. Studies have shown at least adequate reliability for this instrument in a wide variety of cultural and language populations (Institute for Personality and Ability Testing, 1973b).

Home interview. The home interview protocols were designed to obtain detailed information on specific sociodemographic characteristics of the participant families.

To aid in the interpretation of the analyses results, reported below, Appendix A describes in detail all the variables

used in the study and presents their means, sds, Ns, and skewness values, computed separately by longitudinal point.

Analyses

First, zero-order correlations were computed between the PI scores and the hypothesized family predictors; contemporaneous and time-lagged coefficients were thus computed for each longitudinal point. Next, every correlation was again analyzed, this time partialling out relevant variables--singly and in combinations--selected from among the other hypothesized predictors. The variables thus used as controls have been implicated in the research literature (e.g., Laosa, 1982b, 1984a; Laosa & Henderson, 1991) as possible sources of confounding variance affecting the simple correlations for this ethnic population. The zero-order correlations were computed using both listwise and pairwise deletion of cases as options for treating missing data, with practically identical results; the reported zero-order and partial coefficients are based on the latter option. Finally, multiple linear regressions (least squares) were performed to ascertain the proportion of variance in PI scores accounted for jointly by all the hypothesized predictors. Multicolinearity was judged not to be a significant problem affecting the study findings.

Results

The zero-order coefficients are reported first, followed by the partial correlations; the multiple correlations are presented last.

Zero-order Correlations

Table 1 displays the zero-order correlations between the child's Preschool Inventory (PI) scores and the parents' schooling levels, parents' Culture Fair Intelligence Test (CFIT) scores, household income, and father's occupation--for each longitudinal point at which these variables were measured. All but one of these correlations are significant, and all are positive. Of these particular variables, the best predictors of the PI scores are the father's schooling level (average $\underline{r}$ = .54) and the father's CFIT score (average $\underline{r}$ = .52), followed in decreasing order of predictive strength by the mother's schooling level (average $\underline{r}$ = .46), the household income (average $\underline{r}$ = .39), the mother's CFIT score (average $\underline{r}$ = .32), and lastly the father's occupational status (average $\underline{r}$ = .25).

For a closer assessment of the correlations involving parental schooling, Figure 1 plots the child's PI scores as a function of the mother's and father's respective schooling levels. It can be seen that, at least for the schooling level cutpoints examined, the PI scores increase as a generally linear function of parental schooling level; this is true for both parents.

Insert Table 1 and Figures 1 and 2 about here

The zero-order coefficients in Table 1 also show that, at each age, the child's PI score correlates significantly

(negatively) with both sibship size (average $\underline{r}$ = -.38) and the child's birth order (average $\underline{r}$ = -.33). On the other hand, the PI scores do not correlate significantly with either the number of household adults (average $\underline{r}$ = -.08) or parental chronological age (average $\underline{r}$ = -.04).

Figure 2 plots the PI scores as a function of sibship size. It can be seen that this function is not linear: Singletons, scoring as they do lower than the children in two-sibling families, break the otherwise generally linear decline of scores as a function of sibship size.

Finally, the zero-order coefficients in Table 1 also show that, at each age, the PI score correlates significantly (positively) with the use of English in the home (average $\underline{r}$ = .50).

Partial Correlations

Parents' schooling. As the partial coefficients in Table 2 reveal, the correlations between the child's PI scores and the parents' schooling decreased but remained significant after controlling for the opposite-sex parent's schooling, household income, father's occupation, and home language. Furthermore, after adding to this list of controls the sibling constellation and family size variables, the correlations between PI scores and the father's schooling are still significant. This table also shows that the correlations between PI scores and the parents' schooling are significant when controlling for the parents' CFIT scores.

Insert Tables 2, 3, and 4 about here

Household income. The partial coefficients in Table 3 show that the correlations between the PI scores and household income: (a) shrank to nonsignificance after controlling for the father's schooling; (b) similarly, shrank greatly when controlling for the father's use of English in the home; but (c) remained significant when controlling for the mother's schooling, the father's occupation, the mother's use of English in the home, the sibling constellation and family size variables, or the parents' CFIT scores.

Father's occupation. As Table 4 shows, at each age the correlation between the PI score and father's occupation shrank to nonsignificance when controlling for the father's schooling level or household income. On the other hand, the correlation between the PI score at 48 months and father's occupation remained significant when controlling for the mother's schooling and CFIT score, the sibling constellation and family size variables, or home language.

Parents' CFIT scores. Turning first to the mothers, it can be seen in Table 5 that the correlations between the child's PI scores and the mother's CFIT score (a) remain significant when controlling for the father's schooling, father's occupation, household income, the sibling constellation and family size variables, or home language but (b) shrank to nonsignificance

when controlling for the mother's schooling or for the father's CFIT score. In contrast, when we turn to the fathers we see that the correlations between the child's PI scores and the father's CFIT score remain significant when controlling for the father's schooling, the mother's schooling, the mother's CFIT score, household income, father's occupation, the sibling constellation and family size variables, or home language.

Sibling constellation and family size. As the partial coefficients in Table 6 show, the correlations between the child's PI scores and birth order vanished entirely after controlling for sibship size. In contrast, the correlations between the PI scores and sibship size remain significant after controlling for birth order, only-child status, and the number of adults in the household. Furthermore, this negative association between the child's PI score at age 48 months (but not at 42 months) and sibship size is still significant even after simultaneously controlling for these three variables plus the parents' schooling and CFIT scores, father's occupation, household income, and home language.

Home language. As Table 7 shows, the correlations between the child's PI scores and the use of English in the home shrank considerably but generally remain significant after simultaneously controlling for the parents' schooling and CFIT scores, father's occupation, household income, and the sibling constellation and family size variables.

Multiple Regressions

Table 8 presents the results of five separate multiple regression analyses. Each equation regresses the child's PI score on the family variables examined at the indicated ages. The multiple correlation coefficients range in magnitude from .67 to .71 (R^2s = .44 to .50), indicating that the family characteristics examined in this study together account for one-half of the variance in PI scores.

Insert Tables 5, 6, 7, and 8 about here

Discussion and Conclusions

Of the family variables examined in this study, among the strongest predictors of the child's emergent school readiness scores were the father's schooling attainment level and the father's fluid intelligence score. These positive zero-order correlations reached magnitudes higher than .50. Partial coefficients, computed in order to disentangle the variance shared in common by the predictors, revealed that this association between emergent school readiness scores and father's schooling remained significant after partialling out the father's fluid intelligence score. Likewise, the association between emergent school readiness scores and the father's fluid intelligence score remained significant after partialling out the father's schooling. Furthermore, these associations of the emergent school readiness scores with the father's schooling

level and his fluid intelligence score remained significant when controlling for the mother's schooling level, her fluid intelligence score, the father's occupational status, household income, sibling constellation and family size, or home language.

The results thus suggest an important influence of Chicano fathers on their young children's learning and development. Previous research suggests a similar influence of fathers in other cultural groups (McGillicuddy-De Lisi, 1992; Radin, 1981; Stricker & Rock, 1993). Yet, the father-child relationship and paternal contributions to socialization and development have long been neglected and de-emphasized in social and education policies, applied professional practice, and research, particularly regarding Chicanos. The present data echo a small but growing literature (e.g., Lamb, 1981; Phares, 1992) exhorting social scientists to re-evaluate views and approaches that neglect or devalue the paternal role.

The mother's schooling attainment level, too, proved to be a substantial and significant predictor of the child's emergent school readiness scores. This positive relationship between the child's scores and mother's schooling remained significant after controlling for the father's schooling, the mother's and father's fluid intelligence scores, household income, father's occupation, sibling constellation and family size, or home language. In contrast, the ability of the mother's fluid intelligence score to predict the emergent school readiness scores shrank to nonsignificance when controlling for her schooling or for the father's fluid intelligence score.

Although it is not surprising that parental schooling was found to be correlated with the child's emergent school readiness scores, it is informative and significant that this association (a) occurred independently of the parents' fluid intelligence scores, (b) was independent also of each of the other family sociodemographic variables examined, and (c) was at least as strong for the father as for the mother.

What intervening processes might explain the observed association between the parents' schooling and their children's emergent school readiness scores? An explanatory model of the intergenerational impact of formal schooling, advanced earlier (Laosa, 1982b), postulates the following cycle. (a) Among the enduring effects of schooling on the individual are certain dispositions that determine how he or she will behave as a parent--for example, how the person will interact with his or her children. The longer the individual's schooling experience, the greater will be the resemblance between his or her behavior as a parent and the forms of behavior that typically characterize school classrooms[3]. (b) In turn, parental behavior will have important consequences for a child's development of predispositions and dispositions (e.g., specific cognitive skills, discourse and learning strategies, personality characteristics) that later develop into particular classroom behavior patterns. The higher the parent's schooling attainment level, the more academically adaptive will be the predispositions and dispositions that the child acquires in the context of the

parent-child relationship. The model further predicts that these predispositions and dispositions will begin to emerge at an early age and will thus be palpable in the young child's performance on measures of emergent school readiness. The present data are consistent with this model of the intergenerational impact of formal schooling.

Another potent predictor of the child's emergent school readiness scores was the use of English by the parents in their everyday home interactions with the child. This positive association between emergent school readiness scores and the tendency to use English in the home remained generally significant after partialling out the parents' schooling levels and fluid intelligence scores, household income, father's occupation, or the sibling constellation and family size variables. The explanation for this association between emergent school readiness scores and home language might be found in any one or some combination of the following plausible hypotheses. Considering that the instrument was administered in the child's preferred language or dialect, one could speculate that the difficulty level of the Preschool Inventory is higher in its Spanish- than in its English-language edition. In this regard, an intriguing psycholinguistic hypothesis is that the Spanish and English languages differ from one another in the manner in which particular types of information are cognitively represented by children; conceivably, a language difference of this type could be such that the item content of this instrument would

unwittingly favor the performance of English speakers. For example, studies suggest that the frequently observed superior performance of Asian over American and European children on mathematics tests may be the result of differences in how Asian and non-Asian languages represent numerical information (Miura, Okamoto, Kim, Steere, & Fayol, 1993). On the other hand, language is so closely intertwined with culture that, insofar as the choice of home language among Chicanos may reflect their acculturation level, the observed positive association between Preschool Inventory scores and the use of English in the home could reflect the children's level of familiarity with the culture that underlies this assessment instrument. The developers of the Preschool Inventory clearly specified that it is intended to be sensitive to cultural and other environmental influences (Caldwell & Freund, 1980; Cooperative Tests and Services, 1970b). Yet another plausible explanatory hypothesis is that, in nations such as the United States, the frequency and intensity of cognitive stimulation that the individual can possibly receive via language (e.g., from mass media) depend on the individual's proficiency in the society's dominant language. With regard to classical standards of technical quality, the psychometric properties of the Preschool Inventory have been found to be sound and very similar for Hispanic English-monolingual and Hispanic Spanish-monolingual children (Powers & Medina, 1984) and for Chicano and non-Hispanic White children (Laosa, 1982a). More research is clearly needed to illuminate

the subtle influences of culture and language on children's performance.

Household income, too, was a significant predictor of emergent school readiness scores, but its predictive power shrank to nonsignificance, or nearly so, when controlling for the father's schooling level or the father's use of English with the child. The father's occupational status was yet another significant--though weaker--predictor of the emergent school readiness scores, but its predictive ability became nonsignificant after controlling for household income or for the father's schooling. These results suggest that--aside, of course, from cases of extreme environmental deprivation--children's emergent preparedness for formal schooling is less a function of the family's material resources than of parental schooling level.

Sibship size was found to be significantly related to emergent school readiness scores at age 48 months--even after simultaneously controlling for the parents' schooling levels and fluid intelligence scores, father's occupation, household income, home language, the child's birth order, only-child status, and the number of household adults. The data also showed, however, that the association between emergent school readiness scores and sibship size is not consistently linear: Singletons scored lower than children in two-sibling families, thus breaking the otherwise generally linear decline of scores as a function of sibship size. These results are congruent with predictions

inspired by confluence theory and are consistent with data on other populations (Zajonc, 1983). The present results also suggest that sibship size exerts a much more potent influence on emergent school readiness scores than does birth order. Other investigators, too, have found little evidence of birth order effects (e.g., Blake, 1989; Schooler, 1972), although Zajonc (1983) has proposed that birth order does affect intellectual development but only at particular ages. Research is now needed to illuminate the role of siblings in Chicano families and the specific mechanisms that account for their apparent influence on learning and development.

Taken together, the results of this study point to the importance of specific family sociodemographic characteristics as predictors of Chicano children's emergent school readiness; as such, the data remind us of the interdependence among microsystem, mesosystem, exosystem, and macrosystem contexts of human learning and development (Bronfenbrenner, 1979, 1988; Laosa & Henderson, 1991). Traditional conceptions, which tend to consider school readiness as something that resides only within the child, are currently undergoing reformulation in some circles (e.g., Crnic, Lamberty, & Burns, 1992). The emerging trend is toward a view of school readiness that emphasizes mutual influences among child, family, school, community, and society. The present findings appear consistent with this emerging view.

With its high fertility and immigration rates, the Chicano population is young and very rapidly expanding (U.S. Bureau of

the Census, 1990). Accordingly, as the non-Hispanic White majority ages and continues to diminish proportionately in size, this nation--and its future place in an increasingly competitive world--will depend more and more on the skills of a workforce increasingly comprised of Chicanos and similarly situated groups, whose formal education continues to lag seriously behind national norms (Valencia, 1991). From a policy perspective informed by the present intergenerational data, it seems sensible to conclude that one of this nation's wisest investment would be to broaden opportunities for education and increase access to formal schooling--indeed, an investment that, through family influences, could bring much needed returns to future generations. While traditional approaches to school readiness emphasize preparing the child for school, an emerging alternative view is that, in the interest of increasing educational opportunity and access, the meaning of <u>school readiness</u> must be expanded in such a way as to place the stress not only on the child's readiness for school but also--and at least as strongly--on the school's readiness for the child. Realistically, however, if group inequalities--real or perceived--persist in the benefits that individuals can expect to derive from educational attainment (e.g., incentives to graduate; "glass ceilings" on professional advancement [Ogbu, 1986; Rumberger, 1991]), many of the nation's most serious social problems will hardly be solved by school reform alone.

References

Bean, F. D., & Tienda, M. (1987). The Hispanic population of the United States. New York: Russell Sage Foundation.

Blake, J. (1989). Family size and achievement. Berkeley, CA: University of California Press.

Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), Field methods in cross-cultural research (pp. 137-164). Beverly Hills, CA: Sage.

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1988). Ecological systems theory. Unpublished manuscript.

Caldwell, B. M. (1970). Cooperative Preschool Inventory: Revised edition--1970. Princeton, NJ: Educational Testing Service.

Caldwell, B. M. (1974). Cooperative Preschool Inventory: Spanish edition. Princeton, NJ: Educational Testing Service.

Caldwell, B. M., & Freund, J. H. (1980). The Preschool Inventory. Little Rock, AR: Center for Child Development and Education, University of Arkansas.

Cattell, R. B. (1987). Intelligence: Its structure, growth and action. New York: North Holland.

Cattell, R. B., & Cattell, A. K. S. (1957). Prueba de "g": Libre de Cultura--Escala 2, Forma A. Champaign, IL: Institute for Personality and Ability Testing. (a)

Cattell, R. B., & Cattell, A. K. S. (1957). Test of "g": Culture Fair--Scale 2, Form A. Champaign, IL: Institute for Personality and Ability Testing. (b)

Cooperative Tests and Services. (1970). Preschool Inventory revised edition--1970: Directions for administering and scoring. Princeton, NJ: Educational Testing Service. (a)

Cooperative Tests and Services. (1970). Preschool Inventory revised edition--1970: Handbook. Princeton, NJ: Educational Testing Service. (b)

Cooperative Tests and Services. (1974). Preschool Inventory, Spanish edition, preliminary edition: Directions for administering and scoring. Princeton, NJ: Educational Testing Service.

Crnic, K., Lamberty, G., & Burns, C. (1992, January). Reconceptualizing school readiness: A historical perspective. Paper presented at the conference entitled School Readiness: Scientific Perspectives; Columbia, MD.

Durán, R. P. (1983). Hispanics' education and background: Predictors of college achievement. New York: College Entrance Examination Board.

Garcia, E. E. (1991). Bilingualism, second language acquisition, and the education of Chicano language minority students. In R. R. Valencia (Ed.), Chicano school failure and success: Research and policy agendas for the 1990s (pp. 93-118). New York: Falmer.

Garcia Coll, C. T. (1990). Developmental outcome of minority infants: A process-oriented look into our beginnings. Child Development, 61, 270-289.

Goal 1 Technical Planning Subgroup. (1991). The Goal 1 Technical Planning Subgroup report on school readiness. In National Education Goals Panel (Ed.), Potential strategies for long-term indicator development: Reports of the technical planning subgroups (pp. 7-18). Washington, DC: National Education Goals Panel.

Huston, A. C. (Ed.). (1991). Children in poverty: Child development and public policy. New York: Cambridge University Press.

Institute for Personality and Ability Testing. (1973). Measuring intelligence with the Culture Fair Tests: Manual for Scales 2 and 3. Champaign, IL: Author. (a)

Institute for Personality and Ability Testing. (1973). Technical supplement for the Culture Fair Intelligence Tests: Scales 2 and 3. Champaign, IL: Author. (b)

Lamb, M. E. (Ed.). (1981). The role of the father in child development (2nd ed.). New York: Wiley.

Laosa, L. M. (1975). Bilingualism in three United States Hispanic groups: Contextual use of language by children and adults in their families. Journal of Educational Psychology, 67, 617-627.

Laosa, L. M. (1978). Maternal teaching strategies in Chicano families of varied educational and socioeconomic levels. Child Development, 49, 1129-1135.

Laosa, L. M. (1982). Psychometric characteristics of Chicano and non-Hispanic White children's performance on the Preschool Inventory. Journal of Applied Developmental Psychology, 3, 217-245. (a)

Laosa, L. M. (1982). School, occupation, culture, and family: The impact of parental schooling on the parent-child relationship. Journal of Educational Psychology, 74, 791-827. (b)

Laosa, L. M. (1984). Ethnic, socioeconomic, and home language influences upon early performance on measures of abilities. Journal of Educational Psychology, 76, 1178-1198. (a)

Laosa, L. M. (1984). Social policies toward children of diverse ethnic, racial, and language groups in the United States. In H. W. Stevenson & A. E. Siegel (Eds.), Child development research and social policy (pp. 1-109). Chicago: University of Chicago Press. (b)

Laosa, L. M. (1988). Ethnicity and single parenting in the United States. In E. M. Hetherington & J. D. Arasteh (Eds.), Impact of divorce, single parenting, and stepparenting on children (pp. 23-49). Hillsdale, NJ: Erlbaum.

Laosa, L. M. (1991). The cultural context of construct validity and the ethics of generalizability. Early Childhood Research Quarterly, 6, 313-321.

Laosa, L. M., & Henderson, R. W. (1991). Cognitive socialization and competence: The academic development of Chicanos.

In R. R. Valencia (Ed.), Chicano school failure and success: Research and policy agendas for the 1990s (pp. 164-199). New York: Falmer.

LeVine, R. A. (1980). Influences of women's schooling on maternal behavior in the Third World. Comparative Education Review, 24(2, Part 2), S78-S105.

Macías, R. F. (1979). Mexicano/Chicano sociolinguistic behavior and language policy in the United States. Unpublished doctoral dissertation, Georgetown University.

McGillicuddy-De Lisi, A. V. (1992). Correlates of parental teaching strategies in families of children evidencing normal and atypical development. Journal of Applied Developmental Psychology, 13, 215-234.

Merino, B. J. (1991). Promoting school success for Chicanos: The view from inside the bilingual classroom. In R. R. Valencia (Ed.), Chicano school failure and success: Research and policy agendas for the 1990s (pp. 119-148). New York: Falmer.

Messick, S. (1992). Multiple intelligences or multilevel intelligence? Selective emphasis on distinctive properties of hierarchy (Research Report No. 92-29). Princeton, NJ: Educational Testing Service.

Miura, I. T., Okamoto, Y., Kim, C. C., Steere, M., & Fayol, M. (1993). First graders' cognitive representation of number and understanding of place value: Cross-national comparisons--France, Japan, Korea, Sweden, and the United States. Journal of Educational Psychology, 85, 24-30.

National Center for Children in Poverty. (1990). Five million children: A statistical profile of our poorest young citizens. New York: Author, School of Public Health, Columbia University.

National Center for Children in Poverty. (1992). Five million children: 1992 update. New York: Author, School of Public Health, Columbia University.

National Center for Education Statistics. (1992). Language characteristics and academic achievement: A look at Asian and Hispanic eighth graders in NELS:88 (Statistical Analysis Report No. 92-479). Washington, DC: U.S. Government Printing Office.

National Commission on Children. (1991). Beyond rhetoric: A new American agenda for children and families. Washington, DC: U.S. Government Printing Office.

National Education Goals Panel. (1992). The National Education Goals report, 1992: Building a nation of learners. Washington, DC: U.S. Government Printing Office.

Nielsen, F., & Fernandez, R. M. (1981). Hispanic students in American high schools: Background characteristics and achievement. Washington, DC: U.S. Government Printing Office.

Ogbu, J. U. (1986). The consequences of the American caste system. In U. Neisser (Ed.), The school achievement of minority children (pp. 19-56). Hillsdale, NJ: Erlbaum.

Phares, V. (1992). Where's Poppa? The relative lack of attention to the role of fathers in child and adolescent psychopathology. American Psychologist, 47, 656-664.

Podmore, V. N., & St. George, R. (1986). New Zealand Maori and European mothers and their 3-year-old children: Interactive behaviors in pre-school settings. Journal of Applied Developmental Psychology, 7, 373-382.

Powers, S., & Medina, M., Jr. (1984). Reliability and validity of the Cooperative Preschool Inventory for English- and Spanish-speaking Hispanic children. Educational and Psychological Measurement, 44, 963-966.

Radin, N. (1981). The role of the father in cognitive, academic, and intellectual development. In M. E. Lamb (Ed.), The role of the father in child development (2nd ed.; pp. 379-427). New York: Wiley.

Rankin, R. J., Gaite, A. J. H., & Heiry, T. (1979). Cultural modification of effect of family size on intelligence. Psychological Reports, 45, 391-397.

Richman, A. L., Miller, P. M., & LeVine, R. A. (1992). Cultural and educational variations in maternal responsiveness. Developmental Psychology, 28, 614-621.

Rumberger, R. (1991). Chicano dropouts: A review of research and policy issues. In R. R. Valencia (Ed.), Chicano school failure and success: Research and policy agendas for the 1990s (pp. 64-89). New York: Falmer.

Scarr, S. (1992). Developmental theories for the 1990s: Development and individual differences. Child Development, 63, 1-19.

Scarr, S., & Carter-Saltzman, L. (1982). Genetics and intelligence. In R. J. Sternberg (Ed.), Handbook of human intelligence (pp. 792-896). New York: Cambridge University Press.

Scarr-Salapatek, S. (1975). Genetics and the development of intelligence. In F. D. Horowitz (Ed.), Review of child development research (Vol. 4, pp. 1-57). Chicago: University of Chicago Press.

Schooler, C. (1972). Birth order effects: Not here, not now! Psychological Bulletin, 78, 161-175.

Steelman, L. C. (1985). A tale of two variables: A review of the intellectual consequences of sibship size an birth order. Review of Educational Research, 55, 353-386.

Stricker, L. J., & Rock, D. A. (1993). Examinee background characteristics and GRE General Test performance (GRE Board Research Report No. 89-07R; ETS Research Report No. 92-80). Princeton, NJ: Educational Testing Service.

U.S. Bureau of the Census. (1990). The Hispanic population in the United States: March 1989 (Current Population Reports, Series P-20, No. 444). Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1991). The Hispanic population in the United States: March 1990 (Current Population Reports,

Series P-20, No. 449). Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1992). School enrollment--social and economic characteristics of students: October 1990 (Current Population Reports, Series P-20, No. 460). Washington, DC: U.S. Government Printing Office.

Valencia, R. R. (Ed.). (1991). Chicano school failure and success: Research and policy agendas for the 1990s. New York: Falmer.

Zajonc, R. B. (1976). Family configuration and intelligence. Science, 192, 227-236.

Zajonc, R. B. (1983). Validating the confluence model. Psychological Bulletin, 93, 457-480.

Zajonc, R. B., & Markus, G. B. (1975). Birth order and intellectual development. Psychological Review, 82, 74-88.

Zajonc, R. B., Markus, H., & Markus, G. B. (1979). The birth order puzzle. Journal of Personality and Social Psychology, 37, 1325-1341.

Footnotes

[1] The term Chicano, or Mexican American, is generally used in this article to refer to (a) persons who trace their lineage to Mexican or Hispanic forebears who resided within Spanish or Mexican territory that is now part of the Southwestern United States, (b) persons with cultural and linguistic roots in the Spanish or mixed Spanish and Indian history of this region, (c) persons whose parents or more remote ancestors immigrated to the United States from Mexico, and (d) persons who were born in Mexico and now hold United States citizenship or otherwise reside in the United States. (Mexican-origin population is the term used by the U.S. Bureau of the Census.) In the Spanish language, Chicana corresponds to a female referent, and Chicano, the male; the latter term is also used for the gender aggregate.

[2] Although subtest scores can be derived for the PI, their use is not recommended (Cooperative Tests and Services, 1970b).

[3] It is not implied that such choices or the psychological or pedagogical principles underlying them are necessarily under the individual's conscious control or awareness.

Table 1

Zero-order Correlations Between Children's Preschool Inventory (PI) Scores and Hypothesized Predictors, by Longitudinal Age

	PI age (mos.)	
Age and predictor	42	48
Age 30 months		
Mothers's schooling	.45***	.47***
Father's schooling	.52***	.56***
Household income	.38***	.43***
Father's occupation	.16	.31***
Sibship size	-.34***	-.43***
Only child	.07	.12
Birth order	-.30**	-.36***
Household adults	-.09	-.09
Mother's use of English	.52***	.48***
Father's use of English	.52***	.49***
Mother's chronological age	-.04	.04
Father's chronological age	-.10	-.04

(table continues)

Table 1 continued

Age and predictor	PI age (mos.) 42	48
Age 48 months		
Household income	.36***	.39***
Father's occupation	.22*	.31**
Sibship size	-.34***	-.41***
Only child	.01	.02
Household adults	-.05	-.10
Mother's use of English	.45***	.44***
Father's use of English	.54***	.52***
Mother's CFIT score	.31***	.33***
Father's CFIT score	.53***	.51***

Note. Pearson product-moment correlations. N = 81-96.

CFIT, Culture Fair Intelligence Test.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 2

Partial Correlations Between Children's Preschool Inventory (PI) Scores and Parents' Schooling, by Longitudinal Age

	PI age (mos.)	
Predictor and controls	42	48
Mother's schooling (Zero-order r =	.45***	.47***)
Control: Father's schooling	.26**	.28**
Control: Household income	.34***	.36***
Control: Father's occupation	.43***	.44***
Control: Household income and father's occupation	.34***	.36***
Control: Father's schooling, household income, and father's occupation	.23**	.26**
Control: Mother's use of English	.32***	.36***
Control: Father's use of English	.30**	.34***
Control: Mother's and father's use of English	.30**	.34***
Control: Father's schooling and occupation, household income, and mother's and father's use of English	.20*	.23*
Control: Sibship size, only child, birth order, and household adults	.36***	.36***
Control: Father's schooling and occupation, household income, mother's and father's use of English, sibship size, only child, birth order, and household adults	.17	.17
Control: Mother's CFIT score	.36***	.38***
Control: Father's CFIT score	.30**	.34***
Control: Mother's and father's CFIT scores	.28**	.31**

(table continues)

Table 2 continued

Predictor and controls	PI age (mos.) 42	48
Father's schooling (Zero-order r =	.52***	.56***)
Control: Mother's schooling	.38***	.43***
Control: Household income	.39***	.42***
Control: Father's occupation	.51***	.49***
Control: Household income and father's occupation	.42***	.40***
Control: Mother's schooling, household income, and father's occupation	.35***	.32***
Control: Mother's use of English	.34***	.41***
Control: Father's use of English	.30**	.38***
Control: Mother's and father's use of English	.30**	.38***
Control: Mother's schooling, household income, father's occupation, and mother's and father's use of English	.24**	.24**
Control: Sibship size, only child, birth order, and household adults	.44***	.47***
Control: Mother's schooling, household income, father's occupation, mother's and father's use of English, sibship size, only child, birth order, and household adults	.21*	.18*
Control: Mother's CFIT score	.46***	.51***
Control: Father's CFIT score	.27**	.35***
Control: Mother's and father's CFIT scores	.27**	.35***

Note. Parental schooling and the control variables for this table were measured at age 30 months, except for the Culture Fair Intelligence Test (CFIT), which was administered at 48 months.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 3

Partial Correlations Between Children's Preschool Inventory (PI) Scores and Household Income, by Longitudinal Age

	PI age (mos.)	
Predictor and controls	42	48
Household income, at 30 mos. (Zero-order r =	.38***	.43***)
Control: Mother's schooling	.24**	.28**
Control: Father's schooling	.11	.14
Control: Mother's and father's schooling	.06	.09
Control: Father's occupation	.36***	.33***
Control: Mother's and father's schooling and father's occupation	.11	.08
Control: Mother's use of English	.23**	.30**
Control: Father's use of English	.16	.23**
Control: Mother's and father's use of English	.19*	.26**
Control: Sibship size, only child, birth order, and household adults	.33***	.38***
Control: Mother's CFIT score	.32***	.36***
Control: Father's CFIT score	.26**	.31**
Control: Mother's and father's CFIT scores	.24*	.29**

(table continues)

Table 3 continued

Predictor and controls	PI age (mos.) 42	48
Household income, at 48 mos. (Zero-order r =	.36***	.39***)
Control: Mother's schooling	.21*	.24**
Control: Father's schooling	.09	.10
Control: Mother's and father's schooling	.04	.05
Control: Father's occupation	.30**	.29**
Control: Mother's and father's schooling and father's occupation	.05	.03
Control: Mother's use of English	.23*	.27**
Control: Father's use of English	.12	.17
Control: Mother's and father's use of English	.11	.17
Control: Sibship size, only child, birth order, and household adults	.34***	.38***
Control: Mother's CFIT score	.31***	.34***
Control: Father's CFIT score	.20*	.24*
Control: Mother's and father's CFIT scores	.19*	.23*

Note. The control variables for the predictor measured at age 30 months were measured at 30 months, except for the Culture Fair Intelligence Test (CFIT), which was administered at 48 months; the control variables for the predictor measured at 48 months were measured at 48 months, except for parental schooling, which was measured at 30 months.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 4

Partial Correlations Between Children's Preschool Inventory (PI) Scores and Father's Occupational Status, by Longitudinal Age

	PI age (mos.)	
Predictor and controls	42	48
Father's occupation, at 30 mos. (Zero-order r =	.16	.31***)
Control: Mother's schooling	.07	.24**
Control: Father's schooling	-.15	.02
Control: Mother's and father's schooling	-.14	.04
Control: Household income	-.04	.12
Control: Mother's use of English	.04	.23**
Control: Father's use of English	.00	.19*
Control: Mother's and father's use of English	.01	.20*
Control: Mother's and father's schooling, household income, and mother's and father's use of English	-.15	.03
Control: Sibship size, only child, birth order, and household adults	.15	.32***
Control: Mother's CFIT score	.10	.26**
Control: Father's CFIT score	.02	.20*
Control: Mother's and father's CFIT scores	.00	.19*

(table continues)

Table 4 continued

Predictor and controls	PI age (mos.) 42	48
Father's occupation, at 48 mos. (Zero-order r =	.22*	.31**)
Control: Mother's schooling	.15	.25**
Control: Father's schooling	-.06	.03
Control: Mother's and father's schooling	-.04	.06
Control: Household income	.06	.15
Control: Mother's use of English	.12	.22*
Control: Father's use of English	.07	.18*
Control: Mother's and father's use of English	.07	.18*
Control: Mother's and father's schooling, household income, and mother's and father's use of English	-.04	.05
Control: Sibship size, only child, birth order, and household adults	.23*	.34***
Control: Mother's CFIT score	.15	.24**
Control: Father's CFIT score	.02	.14
Control: Mother's and father's CFIT scores	.01	.13

Note. The control variables for the predictor measured at age 30 months were measured at 30 months, except for the Culture Fair Intelligence Test (CFIT), which was administered at 48 months; the control variables for the predictor measured at 48 months were measured at 48 months, except for parental schooling, which was measured at 30 months.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 5

Partial Correlations Between Children's Preschool Inventory (PI) Scores and Parents' Culture Fair Intelligence Test (CFIT) Scores, by Longitudinal Age

	PI age (mos.)	
Predictor and controls	42	48
Mother's CFIT score (Zero-order r =	.31***	.33***)
Control: Mother's schooling	.13	.15
Control: Father's schooling	.19*	.21*
Control: Mother's and father's schooling	.10	.12
Control: Household income	.24**	.26**
Control: Father's occupation	.27**	.28**
Control: Household income and father's occupation	.24**	.25**
Control: Mother's and father's schooling, household income, and father's occupation	.11	.11
Control: Mother's use of English	.26**	.28**
Control: Father's use of English	.20*	.23*
Control: Mother's and father's use of English	.19*	.23*
Control: Mother's and father's schooling, household income, father's occupation, and mother's and father's use of English	.10	.11
Control: Sibship size, only child, birth order, and household adults	.27**	.29**
Control: Father's CFIT score	.11	.15
Control: Mother's and father's schooling and father's CFIT score	.02	.06

(table continues)

Table 5 continued

Predictor and controls	PI age (mos.) 42	48
Father's CFIT score (Zero-order r =	.53***	.51***)
Control: Mother's schooling	.42***	.40***
Control: Father's schooling	.30**	.24*
Control: Mother's and father's schooling	.28**	.21*
Control: Household income	.45***	.42***
Control: Father's occupation	.49***	.45***
Control: Household income and father's occupation	.45***	.40***
Control: Mother's and father's schooling, household income, and father's occupation	.29**	.21*
Control: Mother's use of English	.44***	.42***
Control: Father's use of English	.38***	.37***
Control: Mother's and father's use of English	.38***	.36***
Control: Mother's and father's schooling, household income, father's occupation, and mother's and father's use of English	.28**	.20*
Control: Sibship size, only child, birth order, and household adults	.49***	.46***
Control: Mother's CFIT score	.46***	.43***
Control: Mother's and father's schooling and mother's CFIT score	.26**	.19*

Note. The CFIT and the control variables in this table were measured at age 48 months, except for parental schooling, which was measured at 30 months.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 6

Partial Correlations Between Children's Preschool Inventory (PI) Scores and Sibling Constellation and Family Size Variables, by Longitudinal Age

	PI age (mos.)	
Age, predictor, and controls	42	48
Age 30 months		
Sibship size (Zero-order r =	-.34***	-.43***)
Control: Birth order and household adults	-.16	-.24**
Control: Birth order, only child, and household adults	-.20*	-.28**
Control: Mother's and father's schooling, household income, and father's occupation	-.13	-.28**
Control: Birth order, only child, household adults, mother's and father's schooling, household income, and father's occupation	-.05	-.16
Control: Birth order, only child, household adults, mother's and father's schooling, household income, father's occupation, and mother's and father's use of English	-.04	-.16
Control: Birth order, only child, household adults, and mother's and father's CFIT scores	-.07	-.18
Control: Birth order, only child, household adults, mother's and father's schooling, household income, father's occupation, and mother's and father's use of English and CFIT scores	.00	-.13

(table continues)

Table 6 continued

Age, predictor, and controls	PI age (mos.) 42	48
Age 30 months (continued)		
Only child (Zero-order r =	.07	.12)
Birth order (Zero-order r =	-.30**	-.36***)
Control: Sibship size and household adults	-.02	.02
Control: Sibship size, only child, and household adults	-.02	.02
Household adults (Zero-order r =	-.09	-.09)

(table continues)

Table 6 continued

Age, predictor, and controls	PI age (mos.) 42	48
Age 48 months		
Sibship size (Zero-order r =	-.34***	-.41***)
Control: Birth order and household adults	-.17*	-.22*
Control: Birth order, only child, and household adults	-.21*	-.26**
Control: Mother's and father's schooling, household income, and father's occupation	-.19*	-.30**
Control: Birth order, only child, household adults, mother's and father's schooling, household income, and father's occupation	-.17	-.24*
Control: Birth order, only child, household adults, mother's and father's schooling, household income, father's occupation, and mother's and father's use of English	-.20*	-.26**
Control: Birth order, only child, household adults, and mother's and father's CFIT scores	-.14	-.21*
Control: Birth order, only child, household adults, mother's and father's schooling, household income, father's occupation, and mother's and father's use of English and CFIT scores	-.17	-.24*
Only child (Zero-order r =	.01	.02)
Household adults (Zero-order r =	-.05	-.10)
Control: Sibship size, only child, and birth order	.04	.01

(table continues)

Table 6 continued

Note. The control variables for the predictors measured at age 30 months were measured at 30 months, except for the Culture Fair Intelligence Test (CFIT), which was administered at 48 months; the control variables for the predictors measured at 48 months were measured at 48 months, except for parental schooling, which was measured at 30 months.

$^{*}p < .05$ $^{**}p < .01$ $^{***}p < .001$ (1-tailed tests)

Table 7

Partial Correlations Between Children's Preschool Inventory (PI) Scores and the Use of English in the Home, by Longitudinal Age

	PI age (mos.)	
Age, predictor, and controls	42	48
Age 30 months		
Mother's use of English (Zero-order r =	.52***	.48***)
Control: Father's use of English	.18*	.14
Control: Mother's schooling	.43***	.38***
Control: Father's schooling	.35***	.27**
Control: Mother's and father's schooling	.33***	.24**
Control: Household income	.44***	.38***
Control: Father's occupation	.51***	.44***
Control: Household income and father's occupation	.45***	.38***
Control: Mother's and father's schooling, household income, and father's occupation	.32***	.24**
Control: Sibship size, only child, birth order, and household adults	.48***	.42***
Control: Mother's CFIT score	.48***	.44***
Control: Father's CFIT score	.41***	.36***
Control: Mother's and father's CFIT scores	.40***	.35***
Control: Mother's and father's schooling and CFIT scores	.32**	.23*
Control: Mother's and father's schooling, household income, father's occupation, sibship size, only child, birth order, household adults, and mother's and father's CFIT scores	.30**	.22*

(table continues)

Table 7 continued

Age, predictor, and controls	PI age (mos.) 42	48
Age 30 months (continued)		
Father's use of English (Zero-order r =	.52***	.49***)
Control: Mother's use of English	.16	.16
Control: Mother's schooling	.41***	.36***
Control: Father's schooling	.31***	.23**
Control: Mother's and father's schooling	.27**	.19*
Control: Household income	.41***	.35***
Control: Father's occupation	.50***	.44***
Control: Household income and father's occupation	.41***	.34***
Control: Mother's and father's schooling, household income, and father's occupation	.26**	.18*
Control: Sibship size, only child, birth order, and household adults	.47***	.42***
Control: Mother's CFIT score	.47***	.43***
Control: Father's CFIT score	.39***	.35***
Control: Mother's and father's CFIT scores	.38***	.34***
Control: Mother's and father's schooling and CFIT scores	.27**	.19*
Control: Mother's and father's schooling, household income, father's occupation, sibship size, only child, birth order, household adults, and mother's and father's CFIT scores	.25*	.15

(table continues)

Table 7 continued

Age, predictor, and controls	PI age (mos.) 42	48
Age 48 months		
Mother's use of English (Zero-order r =	.45***	.44***)
Control: Father's use of English	-.04	-.02
Control: Mother's schooling	.30**	.28**
Control: Father's schooling	.28**	.25**
Control: Mother's and father's schooling	.22*	.18*
Control: Household income	.36***	.34***
Control: Father's occupation	.41***	.39***
Control: Household income and father's occupation	.35***	.33***
Control: Mother's and father's schooling, household income, and father's occupation	.22*	.18*
Control: Sibship size, only child, birth order, and household adults	.41***	.40***
Control: Mother's CFIT score	.42***	.41***
Control: Father's CFIT score	.33***	.32**
Control: Mother's and father's CFIT scores	.32**	.32**
Control: Mother's and father's schooling and CFIT scores	.21*	.18*
Control: Mother's and father's schooling, household income, father's occupation, sibship size, only child, birth order, household adults, and mother's and father's CFIT scores	.21*	.18

(table continues)

Table 7 continued

Age, predictor, and controls	PI age (mos.) 42	48
Age 48 months (continued)		
Father's use of English (Zero-order r =	.54***	.52***)
Control: Mother's use of English	.33***	.30**
Control: Mother's schooling	.41***	.38***
Control: Father's schooling	.34***	.28**
Control: Mother's and father's schooling	.28**	.22*
Control: Household income	.44***	.40***
Control: Father's occupation	.50***	.47***
Control: Household income and father's occupation	.43***	.39***
Control: Mother's and father's schooling, household income, and father's occupation	.28**	.22*
Control: Sibship size, only child, birth order, and household adults	.51***	.49***
Control: Mother's CFIT score	.49***	.47***
Control: Father's CFIT score	.40***	.38***
Control: Mother's and father's CFIT scores	.39***	.37***
Control: Mother's and father's schooling and CFIT scores	.27**	.21*
Control: Mother's and father's schooling, household income, father's occupation, sibship size, only child, birth order, household adults, and mother's and father's CFIT scores	.28**	.22*

Note. The control variables for the predictors measured at age 30 months were measured at 30 months, except for the Culture Fair Intelligence Test (CFIT), which was administered at 48 months; the control variables for the predictors measured at 48 months were measured at 48 months, except for parental schooling, which was measured at 30 months.

*p < .05 **p < .01 ***p < .001 (1-tailed tests)

Table 8
Multiple Regression Analyses

Dependent variable	Predictors	R	R^2	F
PI (42 mos.)	Mother's and father's schooling, household income, father's occupation, mother's and father's use of English, sibship size, birth order, only child, household adults (30 months), and mother's and father's CFIT scores (48 months).	.668	.45	5.8***
PI (42 mos.)	Mother's and father's schooling (30 months), household income, father's occupation, mother's and father's use of English, sibship size, birth order, only child, household adults, and mother's and father's CFIT scores (48 months).	.666	.44	5.8***
PI (48 mos.)	Mother's and father's schooling, household income, father's occupation, mother's and father's use of English, sibship size, birth order, only child, household adults (30 months), and mother's and father's CFIT scores (48 months).	.670	.45	5.9***
PI (48 mos.)	Mother's and father's schooling (30 months), household income, father's occupation, mother's and father's use of English, sibship size, birth order, only child, household adults, and mother's and father's CFIT scores (48 months).	.687	.47	6.5***
PI (48 mos.)	Mother's and father's schooling, household income, father's occupation, mother's and father's use of English, sibship size, birth order, only child, household adults (30 months), household income, father's occupation, mother's and father's use of English, sibship size, only child, household adults, and mother's and father's CFIT scores (48 months).	.708	.50	4.2***

Note. Missing data were treated by mean substitution. df = 12 and 87 for each of the first four analyses; df = 19 and 80 for the last analysis. PI, Preschool Inventory scores. CFIT, Culture Fair Intelligence Test. ***p < .001 (1-tailed tests)

Appendix A

Descriptions, Means, Standard Deviations, Skewness, and Number of Cases for All Variables

	Age (mos.)		
Variable	30	42	48
Preschool Inventory. (Total number of items answered correctly)			
M	--	25.9	35.8
SD		9.5	10.2
S		0.5	0.0
N		96	92
Mothers's schooling. (Years of formal schooling completed, calculated as the highest level of formal education attained; grade repetitions not counted)			
M	10.9	--	--
SD	2.8		
S	-0.4		
N	100		
Father's schooling. (Calculated in the same manner as for the mothers, described above)			
M	11.7	--	--
SD	3.4		
S	-0.5		
N	100		

(appendix continues)

Appendix A continued

Variable	Age (mos.) 30	42	48
Father's occupation[a].			
M	5.0	--	5.0
SD	1.7		1.6
S	0.0		-0.2
N	100		91
Household income. (Annual dollars)			
M	11171.1	--	14245.1
SD	5633.7		7452.6
S	0.5		0.8
N	100		93
Birth order. (Focal child's birth order: 1 = first-born or only child, 2 = second born, etc.)			
M	2.6	--	--
SD	1.4		
S	1.1		
N	100		
Only child. (Whether the focal child is the only child under 18 years old residing in the household: 1 = no, 2 = yes)			
% yes	15	--	10
N	100		93

(appendix continues)

Appendix A continued

Variable	Age (mos.) 30	42	48
Sibship size. (Total number of children younger than 18 years currently residing in the household, including focal child)			
M	2.9	--	3.0
SD	1.4		1.4
S	1.1		1.2
N	100		93
Household adults. (Total number of persons 18 years of age and older currently residing in the household, including parents)			
M	2.1	--	2.1
SD	0.4		0.6
S	3.4		2.2
N	100		93
Mother's use of English with child. (Of all the verbalizations that mother directs to child in everyday interactions, percentage in English--as opposed to Spanish and intermixing the two languages within sentences)			
M %	59.8	--	63.5
SD	34.1		37.3
S	-0.5		-0.6
N	100		93

(appendix continues)

Appendix A continued

Variable	Age (mos.) 30	42	48
Father's use of English with child. (Measured in the same manner as for the mothers above)[b]			
M %	56.2	--	60.3
SD	39.9		41.2
S	-0.3		-0.5
N	100		87
Culture Fair Intelligence Test. (Total number of items answered correctly)			
Mothers			
M	--	--	25.8
SD			6.5
S			-0.2
N			94
Fathers[b]			
M	--	--	26.8
SD			7.2
S			-0.3
N			83

(appendix continues)

Appendix A continued

	Age (mos.)		
Variable	30	42	48
Mother's chronological age.			
M	28.7	--	--
SD	5.0		
S	0.0		
N	100		
Father's chronological age.			
M	30.9	--	--
SD	6.0		
S	0.6		
N	100		

Note. Dashes indicate longitudinal points at which the design did not call for collecting data on a particular variable.

[a]Father's occupation was measured using the following scale adapted from that used by the U.S. Bureau of the Census: 1 = private household workers, 2 = service workers except in private households, 3 = laborers and farmers, 4 = equipment operators, 5 = craftsmen, foremen, and kindred workers, 6 = sales, clerical, and kindred workers, 7 = small business owners, managers, or administrators, 8 = professional and technical workers, and 9 = large business owners or managers.

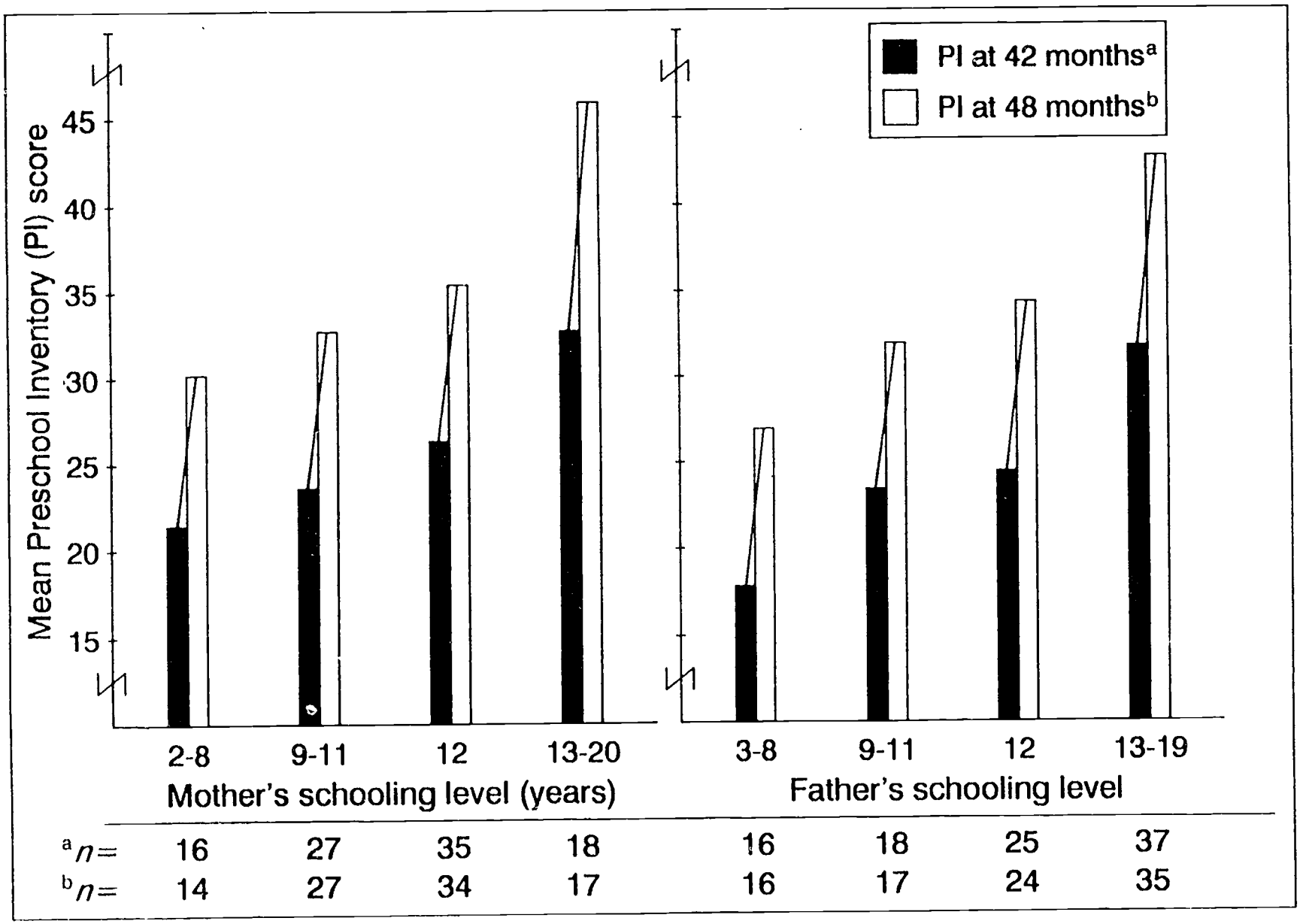
[b]The N for this variable at 48 months reflects the fact that for a fraction of the sample the father was unavailable or the mother unable to provide the information about the father at this longitudinal point.

Figure Captions

Figure 1. Children's Preschool Inventory scores at two ages as a function of mothers' and fathers' formal schooling attainment levels.

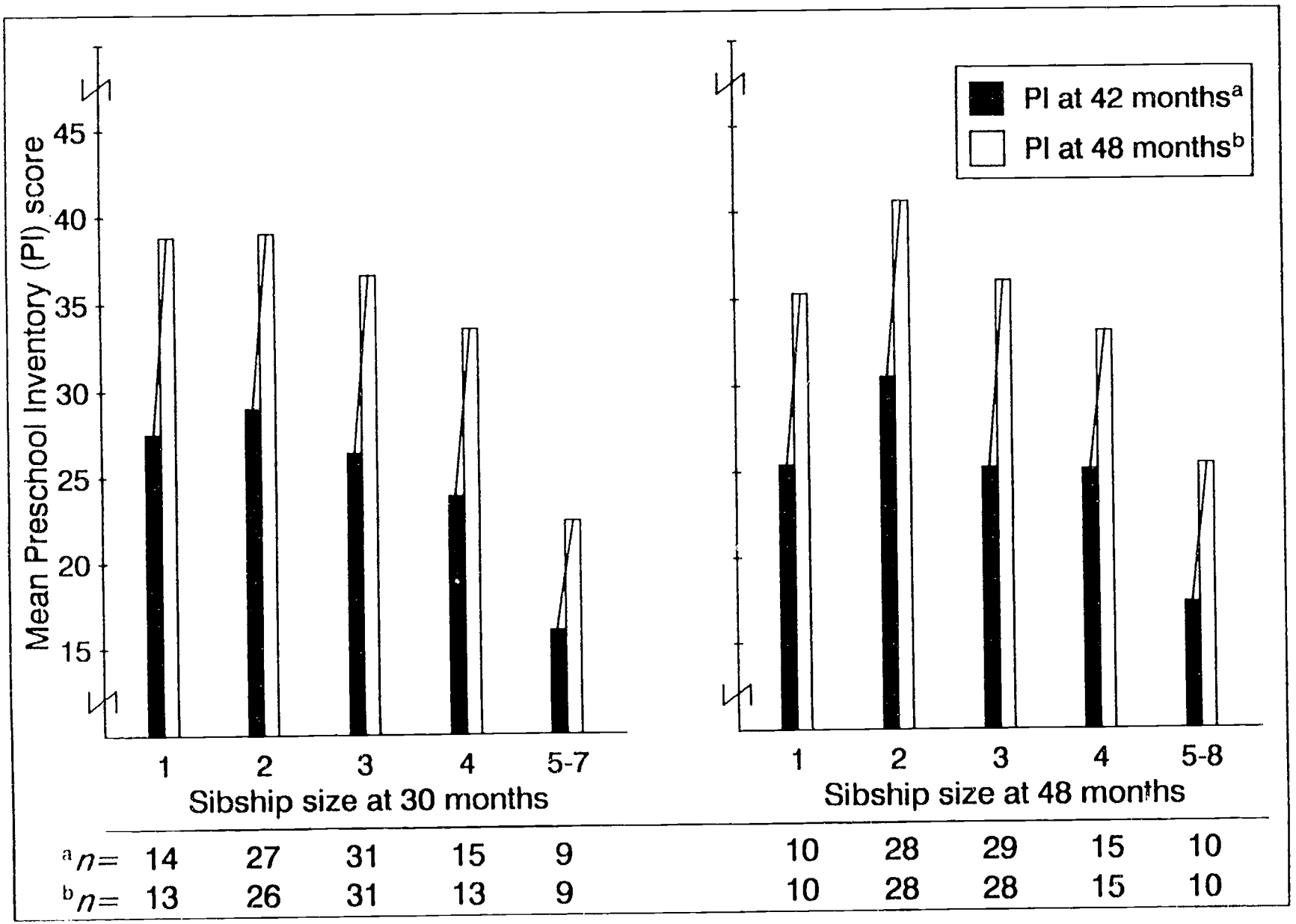
Figure 2. Children's Preschool Inventory scores at two ages as a function of sibship size.

Figure 1



[a]*n*=	16	27	35	18	16	18	25	37
[b]*n*=	14	27	34	17	16	17	24	35

Figure 2


Mean Preschool Inventory (PI) score
45
40
35
30
25
20
15
PI at 42 months[a]
PI at 48 months[b]
1
2
3
4
5-7
Sibship size at 30 months
1
2
3
4
5-8
Sibship size at 48 months
[a]n= 14 27 31 15 9
[b]n= 13 26 31 13 9
10 28 29 15 10
10 28 28 15 10